

REMARKS

Claims 1, 3-25, 27-51, and 53-79 are pending. The independent claims are claims 1, 25, 51, and 77-79. Independent method claims 1, 25, and 51 have been amended to include the features of dependent claims 2, 26, and 52, respectively. As result, dependent claims 2, 26, and 52 have been cancelled. Independent apparatus claims 77-79 have been similarly amended to recite that the “frequency-dependent polarization effects cause wavelength dependent changes in the state of polarization (SOP) of the optical signal.”

The drawings stand objected to for not showing the optical fiber as claimed in claim 31. Accordingly, we have amended Figure 4a to show explicitly optical fiber 411 as a component of optical system 410, and we have amended Figure 4b to show explicitly optical fiber 411' as a component of optical system 410'. We have also amended the specification to refer to the optical fiber in Figures 4a and 4b. Support for the amendment to the drawings can be found at, for example, page 1, lines 16-18; page 6, lines 2-3; page 10, lines 8-16; page 25, lines 24-25; and page 29, lines 1-2. Therefore we ask the Examiner to withdraw the objection.

Claims 1, 5-11, 17-19, 25, 30-34, 40-42, 49, 51, 57-60, 66-68 and 77-79 stand rejected as anticipated by U.S. Patent No. 6,275,623 (“Brophy”). Independent method claims 1, 25, and 51 have been amended to include the features of dependent claims 2, 26, and 52, respectively, claims that were not rejected as anticipated by Brophy. Accordingly, we submit that the Brophy anticipation rejection of independent method claims 1, 25, and 51, as currently amended, is now moot. Claims that dependent from independent method claims 1, 25, and 51 distinguish Brophy for at least the same reasons. Independent apparatus claims 77-79 have been amended to include language similar to dependent claims 2, 26, and 52, respectively. Therefore, we submit that these claims as currently amended also distinguish Brophy. Accordingly, we ask the Examiner to withdraw the Brophy anticipation rejection.

Claims 1, 25, 51, and 77-79 stand rejected as obvious over U.S. Patent No. 5,719,650 (“Wefers”) in view of Brophy. As described above, independent method claims 1, 25, and 51 have been amended to include the features of dependent claims 2, 26, and 52, respectively,

claims that were not rejected as obvious over Wefers and Brophy. Accordingly, we submit that the Wefers obviousness rejection of independent method claims 1, 25, and 51, as currently amended, is now moot. Independent apparatus claims 77-79 have been amended to include language similar to dependent claims 2, 26, and 52, respectively. Therefore, we submit that these claims as currently amended also distinguish Wefers and Brophy. Accordingly, we ask the Examiner to withdraw the obviousness rejection based on Wefers and Brophy.

Claims 1-4, 6-9, 11, 25-29, 31-32, 34, 48, 51-56, 58, 60, and 77-79 stand rejected as obvious over U.S. Patent No. 5,504,575 ("Stafford") in view of U.S. Patent No. 6,385,357 ("Jopson").

The Action purports that it would be obvious to modify Stafford to include PMD compensation as taught by Jopson, and that the resulting combination would render each independent claim unpatentable (see pages 7-8 of action). For example, the Action proposes to modify Stafford because "it would have been obvious to one of artisan from the same endeavor at the time of the invention was made to modify the SLM spectrometer of Stafford by incorporated a precompensation signal because this helps to compensate the first and higher order PMD in an optical fiber as suggested by Jopson" (page 7 of the action). We respectfully disagree.

Stafford makes no reference whatsoever to PMD, or its compensation. To the contrary, Stafford is directed to a spectrometer in which an SLM is used to attenuate or block selected frequency components (see, e.g., col. 1, lines 51-52; col. 1, lines 62-64; col. 2, lines 15-19; col. 3, lines 12-19). This allows a detector in the spectrometer to measure the intensity of selected frequency component(s) of light received from a sample without moving parts common in a conventional spectrometer (see, e.g., col. 2, lines 19-24). As a result, there is no motivation to modify Stafford as proposed in the action because there is no indication that that PMD is even present in the light received from the sample.

Moreover, even if PMD were present in the light received from the sample, there is no indication that it would negatively impact Stafford's spectroscopic measurement. To the contrary, while PMD can degrade the bandwidth of a light signal, such as a telecommunication

signal (see, e.g., the action at page 8), the Action points to no support in either Stafford or Jopson that such bandwidth degradation is relevant to the intensity measurement of selected frequency component(s) of light, such as in Stafford's spectrometer. In short, the Action fails to explain why one of ordinary skill in the art would be motivated to try to correct PMD in a spectrometer, where there is no indication that PMD is even present in the spectrometer and there is no indication that even if PMD were present, that *bandwidth* distortions related to the PMD would somehow degrade *spectroscopic* measurements sufficiently enough to motivate one to compensate for the PMD.

Finally, even if PMD were present in light received from the sample in Stafford's spectrometer, and even if there was motivation to compensate for the PMD, there is no suggestion in Jopson to modify Stafford to meet the claim limitations. To the contrary, if the Action relies on Jopson as the basis for correcting PMD in Stafford's spectrometer, even though Stafford fails to recognize any such PMD, then the only reasonable modification to Stafford is *to use the technique in Jopson to compensate for PMD*. However, the PMD compensation technique in Jopson does *not* involve "spatially dispersing frequency components ... on a spatial light modulator," as recited in claim 1 (and similarly recited in the other independent claims). Instead, Jopson uses a *serial* arrangement of components to compensate for PMD over a range of frequencies (e.g., polarization pair controller 720 and compensator 745 comprising two adjustable sections of polarization preserving fiber as shown in Figures 7 and 8b and described in the corresponding text). Accordingly, Jopson teaches away from the modification proposed in the Action because discloses a serial approach to compensating PMD, rather than one that involves "spatially dispersing frequency components ... on a spatial light modulator."

If anything, the only motivation for modifying the SLM in Stafford's spectrometer to compensate for PMD is found in applicant's specification. But this is impermissible hindsight, and cannot be the basis for making an obviousness rejection.

Accordingly, we ask the Examiner to withdraw the obviousness rejection.

Furthermore, even if Stafford can be modified based on Jopson to compensate for PMD in the light from the sample, which we dispute as described above, the resulting combination

does not teach or suggest “providing a precompensation signal indicative of frequency-dependent polarization effects in a *downstream* optical system … and independently adjusting the polarization transfer matrix of multiple regions of the SLM based on the precompensation signal to at least partially precompensate the optical signal for distortions caused by the frequency-dependent polarization effects in the downstream optical system,” as recited in claim 25, or “a controller coupled to the SLM and configured to receive a precompensation signal indicative of the frequency-dependent polarization effects in the *downstream* optical system, wherein during operation the controller responds to the precompensation signal by causing the SLM to independently adjust the polarization transfer matrix of the multiple regions based on the precompensation signal to at least partially precompensate the optical signal for distortions caused by the frequency-dependent polarization effects in the *downstream* optical system,” as recited in claim 78 (emphasis added).

To the contrary, Stafford only shows a focusing device (24, 48) between his SLM (20, 46, 90) and his detector (28, 50, 100) (See Figs. 1-5). In other words, the only “downstream optical system” in Stafford is a focussing device such as the mirror (48), and we can find absolutely no indication in Stafford or Jopson that that the SLM or DMD should be responsive to some type of precompensation signal associated with that focussing device. Accordingly, we ask the Examiner to withdrawn the rejection of independent claims 25 and 78, and the claims that depend from them.

Similarly, even if Stafford can be combined with Jopson, which we dispute as described above, neither references discloses “providing a *model* of the frequency-dependent polarization effects, wherein the frequency dependent polarization effects cause wavelength dependent changes in the state of polarization (SOP) of the optical signal; … and independently adjusting the polarization transfer matrix of multiple regions of the SLM based on the model to *emulate* the optical signal transmission,” as recited in claim 51, or “a controller coupled to the SLM, wherein during operation the controller causes the SLM to independently adjust the polarization transfer matrix of the multiple regions to *emulate* the optical signal transmission based on a *model* of the frequency-dependent polarization effects,” as recited in claim 79 (emphasis added).

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Page : 21 of 21

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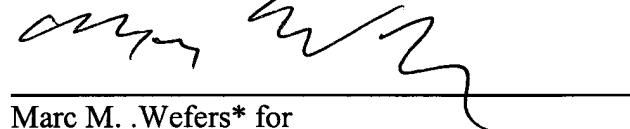
To the contrary, we can find no reference whatsoever to the claimed emulation in either reference, or in the Office Action for that matter. Accordingly, we ask the Examiner to withdrawn the rejection of independent claims 51 and 79, and the claims that depend from them.

In view of the above, we ask that all claims be allowed.

Enclosed is a \$55 check for the Petition for Extension of Time fee. Please apply any other charges or credits to deposit account 06-1050, referencing Attorney Docket No. 12818-003001.

Respectfully submitted,

Date: 5/25/04



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**\*See attached document certifying that Marc M. Wefers has limited recognition to practice before the U.S. Patent and Trademark Office under 37 C.F.R. § 10.9(b).**

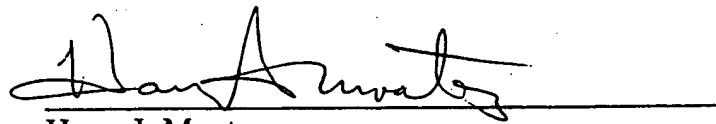
**BEFORE THE OFFICE OF ENROLLMENT AND DISCIPLINE  
UNITED STATE PATENT AND TRADEMARK OFFICE**

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**Expires: December 6, 2004**



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Harry I. Moatz  
Director of Enrollment and Discipline